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Research Article

Adherence and Quality of Life of Hypertension Patients in Gunung Jati Hospital, Cirebon, Indonesia

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Abstact
The treatment effectiveness of hypertension could be influenced by patients' characteristics and patients' adherence with medication. Besides reaching the goal of blood pressure decrease after the treatment, their quality of life has become the main concern regarding effectiveness of hypertension treatment. This study aimed to explore the hypertension patients' adherence and quality of life. In addition, it was studied which factors associated with adherence and quality of life in hypertension patients treated with antihypertensive at Gunung Jati Hospital, Cirebon. We recruited 85 adult hypertension patients who were treated with antihypertensive agents for at least 6 months. The patients' adherence was measured by Medication Adherence Report Scale and the patients' quality of life was measured by Indonesian version of Short Form-36 questionnaire. The patients' adherence was found as 24.03 (SD: 1.98) and there were no significant differences of patients' adherence using monotherapy and combination therapy. The patients' characteristics such as, age, gender and education level could not predict patients' adherence ($p>0.05$). The average of Physical Component Summary (PCS) and Mental Component Summary (MCS) were 43.35 (SD: 9.4) and 52.13 (SD:5.59). Age and gender may predict PCS, however, education and comorbidity may predict MCS ($p<0.05$). Hypertension patients' adherence in Gunung Jati hospital is good. The PCS and MCS scores in this study are comparable to the other previous studies. The patients' characteristic could not be the predictor of patients' adherence. .

Keywords: Adherence, hypertension, quality of life, MARS, SF-36

Kepatuhan dan Kualitas Hidup Pasien Hipertensi Di Rumah Sakit Gunung Jati Cirebon

Abstrak
Efektivitas terapi pasien hipertensi dapat dipengaruhi oleh beberapa faktor karakteristik pasien dan kepatuhan pasien. Selain menurunkan tekanan darah, luaran lain dari terapi hipertensi adalah meningkatkan kualitas hidup pasien. Tujuan penelitian ini adalah untuk mengetahui kepatuhan dan kualitas hidup pasien hipertensi serta memahami faktor prediksi kepatuhan dan kualitas hidup pasien. Sejumlah 85 pasien hipertensi yang telah mengonsumsi obat hipertensi minimal 6 bulan berpartisipasi dalam penelitian ini. Kepatuhan pasien diukur dengan kuesioner *Medication Adherence Report Scale* versi Indonesia dan kualitas hidup pasien diukur dengan kuesioner *Short Formulary-36* versi Indonesia. Kepatuhan pasien hipertensi di RS Gunung Jati Cirebon adalah 24,03 (SD:1,98) dan tidak terdapat perbedaan signifikan antara kepatuhan pasien hipertensi yang menggunakan monoterapi dan kombinasi terapi. Karakteristik pasien seperti usia, jenis kelamin, dan tingkat pendidikan bukan merupakan prediktor kepatuhan ($p>0,05$). Rata-rata *Physical Component Summary* (PCS) dan *Mental Component Summary* (MCS) adalah 43,35 (SD: 9,4) dan 52,13 (SD:5,59). Usia dan jenis kelamin merupakan prediktor PCS dan pendidikan serta komorbiditas merupakan prediktor MCS ($p<0,05$). Kepatuhan pasien hipertensi di RS Gunung Jati Cirebon cukup baik. Komponen PCS dan MCS cukup baik dibandingkan dengan penelitian lain. Karakteristik demografi pasien bukan merupakan prediktor kepatuhan pasien.

Kata kunci: Hipertensi, kepatuhan, kualitas hidup, SF-36, MARS

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Introduction

The prevalence of hypertension in Indonesia is around 25.8.[1] Hypertension is one of the main risk factors of cardiovascular diseases and could cause high cost of treatment due to the long term use of antihypertensive, hospitalization and physician visitation.[2] To get better results of hypertension treatment, in addition to pharmacological treatment, some lifestyle modification should be applied, like: physical activities, weight loss, stress management and diet arrangement.[3] Furthermore, motivational and cognitive interventions should be modified to increase patients' adherence.[4]

Patients' adherence in taking medication for chronic illnesses can influence the effectiveness of treatment. Some previous studies showed that an increase of patients' adherence could result in a greater impact of the hypertension treatment.[5] Factors such as perceived side effects of medication, patients' cognitions about the medical condition and its pharmacological treatment, and motivation, perceived control and self-efficacy were related to poor adherence of patients with hypertension.[4] In the other hand, some patients' characteristics like older patients, patients with higher education and higher income, low comorbidity showed significant association with higher adherence.[6]

Regarding to the patients' adherence, psychological interventions and pharmacists' interventions tend to be effective in improving patients' adherence which results in good quality of life.[7,8] Another method to improve the patients' adherence is by sending Short Message Service (SMS) to the patients as a reminder for clinical visit, medication taking, and short education about hypertension. This method is considered as an easy and low cost approach.[9]

According to the predictors of patients' quality of life, the study of Sung et al.[8] found that there was significant relationship between the blood pressure variability and patients' quality of life. The patients' adherence which may affect the blood pressure control had significant association with patients' quality of life.[10] In another study which was comparing the hypertension and normotensive patients showed that the normotensive patients had a better quality of life.[11]

Some patients' characteristics like education level, marital status and occupational in the hospital could affect patients' quality of life in the domain of mental health[12] and male patients could predict all the domains of quality of life.[13] The other study in China, over the 4510 hypertension patients, also stated that age, gender, educational level and some comorbidities are significantly associated to the health related quality of life.[14] Our current study was aimed to understand the hypertension patients' adherence and quality of life and to explore the factors predicting patients' adherence and quality of life in Gunung Jati hospital.

Method

This study was carried out by using a cross sectional design. The study subjects were adult hypertension patients who were treated with antihypertensive agent for at least 6 months. Patients were excluded if they were pregnant, breastfeeding, or deaf due to their inability to do the communication with the investigator during the study communication with the investigator during the study. This study recruited 85 hypertension outpatients who visited the Gunung Jati hospital during October to December 2013. The researcher asked the patients to fill in the questionnaire at the hospital after informed consent procedure. Some of the patients refused to fill in the questionnaires due to the limited time they had during the visitation in the hospital.

Patients' adherence was measured

Table 1 Patients' Characteristics (n=85)

Characteristic	Total
Gender	
Male	38 (44.71%)
Female	47 (55.29%)
Age (yo) n=85	54.6±8.68
Education	
≤Senior High School	65(76,5%)
>Senior High School	20(23,5%)
Occupation	
Unskilled	39 (45,88%)
Medium skill	33 (38,82%)
Higher skill	13 (15,30%)
Insurance	
Without insurance	15 (17,65%)
Insurance	70 (82,35%)
Hypertension history	
Father	7 (8,24%)
Mother	24 (28,24%)
Father and Mother	2 (2,35%)
Grand mother	2 (2,35%)
Not available	50 (58,82%)
Comorbidity (one patient could have >1 comorbidities)	
Peptic Ulcer Disease	5 (5,88%)
Infection	7 (8,24%)
Hyperuricemia	1 (1,18%)
Rheumatoid Arthritis	3 (3,53%)
Diabetes Mellitus	11 (12,94%)
Hypercholesterolemia	10 (11,76%)
Epilepsy	3 (3,53%)
Stroke	8 (9,41%)
IHD	9 (10,59%)
CHD	8 (9,41%)
Hypertension	20 (23,53%)

IHD: Ischemic Heart Disease, CHF: Congestive Heart Failure

by Medication Adherence Report Scale (MARS)[15] and patients' quality of life was measured by SF-36.[16] We used MARS in measuring the patients' adherence due to the availability of adherence questionnaire in Indonesian Language which has been validated in hypertension patients.[17] MARS also describes the psychometric perspective which should be considered in this study because we also measured the patients' quality of life.[18] We categorized patients into monotherapy who used only one antihypertensive agent, and combination therapy patients who used more than one antihypertensive for at least 6 months. We also collected patients sociodemographic data, like age, gender, education, occupation and comorbidity from the patients' medical record.

Before the recruitment procedures were started, patients were fully informed about

Table 2 Level of Patient's Adherence, PCS, and MCS

	Treatment		P value
	Monotherapy (n=36)	Combination therapy (n=49)	
	Mean±SD	Mean±SD	
Adherence	23.80 ± 1.80	24.20 ± 2.03	0.32
Perceived health	53.58 ± 14.05	56.15 ± 13.70	0.93
PCS	42.48 ± 9.25	44.17 ± 9.55	0.42
MCS	52.29 ± 5.58	52.01 ± 5.65	0.82

PCS and MCS were computed using factor score coefficients of Australian health subjects[13]

the study, and informed consent was acquired. This study has been approved by Ethical Committee of University of Muhammadiyah, Yogyakarta.

Data of patients' characteristics were analyzed statistically and the patients' characteristics like age, gender, comorbidity, education level and occupation which predicting patients' compliance and quality of life, were analyzed using linear regression tests. The Physical Component Summary (PCS) and Mental Componen Summary (MCS) scores were computed using the mean, SD and factor score coefficients scales of Australian health subjects[19] due to unavailability of Indonesia health subjects data of SF-36. Meaningwhile, the differences of patients'quality of life in this study and other studies were tested using ANOVA-test. The statistical tests were carried out by Statistical Package for the Social Science (SPSS) software version 16.

Results

We recruited 85 hypertension patients. Table I shows the patients' characteristics. Most of the subjects in this study were female and the mean of age of patients was 54 years old (SD= 8.67). Most of the patients had education level up to senior high school (76.5%), were unskilled patients (45.88%) and were under the health insurance coverage (82.35%). About 77% patients had comorbidity which means that patients should take more medicine which might influence their quality of life. Our study presents the association analysis between patients' characteristics and MARS score, PCS and MCS. According to the multiple regression analysis of age, gender, treatment and education as independent variables and MARS score as dependent variable, it was found the R square value of 4%, meaning that the independent variables could explain 4% of variability in MARS

Table 3 Comparison of PCS and MCS in hypertension patients of Indonesia, India, and USA[15,23]

Hypertension patients in	n	PCS Mean ± SD	MCS Mean ± SD
Indonesia	85	43.35 ± 9.4	52.13 ± 5.59
India [15]	118	39.17 ± 5.97	41.39 ± 5.58
USA [23]	224	49.4 ± 9.3	51.1 ± 10.1
		ANOVA test P value: 0.01*; 0.00*; 0.00* between group 1–2; group 1-3; group 2–3, respectively	ANOVA test P value: 0.00*; 0.61; 0.00* between group 1–2; group 1-3; group 2–3, respectively

Table 4 Comparison of PCS and MCS in Indonesian Hypertension Patients and Healthy Subject in UK and USA[16]

Subjects	n	PCS Mean ± SD	MCS Mean ± SD
Indonesian hypertension patients	85	43,45 ± 9.4	52.13 ± 5.59
Healthy subjects in UK	8207	50.00±10.00	50.00 ± 10.00
Healthy subjects in USA	224	54.2 ± 5.7	52.7 ± 9.4
		ANOVA test P value : 0.00*; 0.00* 0.00* between group 1–2; group 1–3; group 2–3, respectively	ANOVA test P value : 0.12; 0.89; 0.002* between group 1–2; group 1–3; group 2–3, respectively

score (p=0.459). The multiple regression analysis between age, gender, education, comorbidity and occupation as independent variables and PCS scale as independent variable showed significant association with the R square value of 39% (p=0.01). Only Age and gender showed significant association with PCS score (p=0.00 and 0.01, respectively). Furthermore, the similar independent variables also had significant association to the MCS score (R square: 13%, p=0.048). Only education and comorbidity showed significant association to the MSC score (p=0.03 and 0.045, respectively).

In this study, we found the mean of patients adherence was 24.03 (SD: 1.98). Table II shows the level of patients' adherence, patients' perceived health, PCS and MCS. The adherence's mean of monotherapy and combination therapy patients were 23.8 (SD=1.8) and 24.2 (SD=2.0), respectively and the patients' perceived health's mean in monotherapy and combination therapy were 68.3 (SD=16.3) and 70.6 (SD=16.3), respectively. The patients's PCS and MCS were 42.48 (SD: 9.25) and 52.29 (SD: 5.58), respectively in monotherapy group, however the scores were 44.17 (SD: 9.55) and 52.02

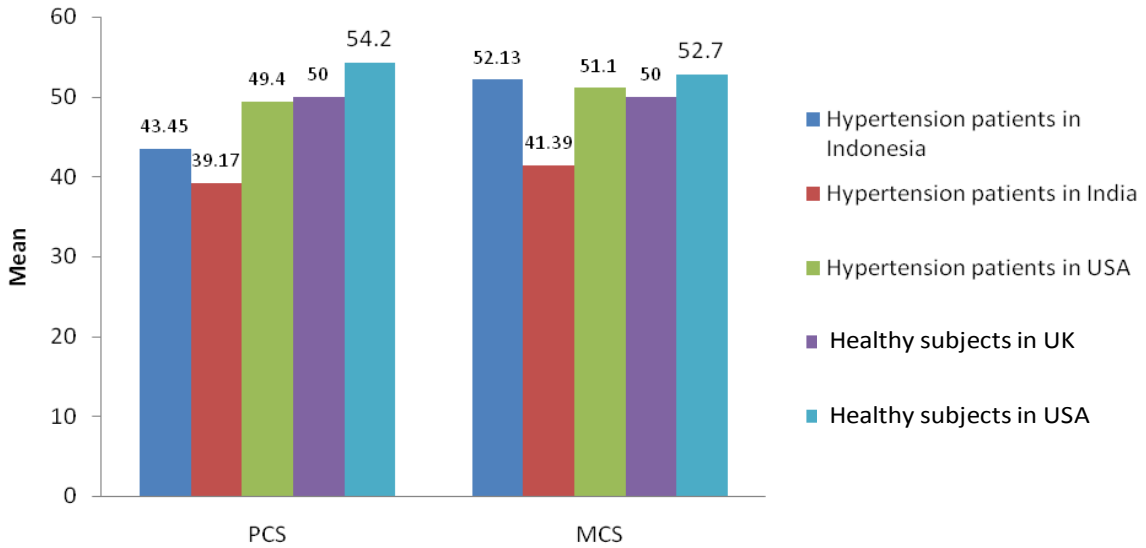

Figure 1 Comparison of PCS and MCS among Indonesia and Other Countries in Hypertension Patients and Healthy Subjects[15,16]

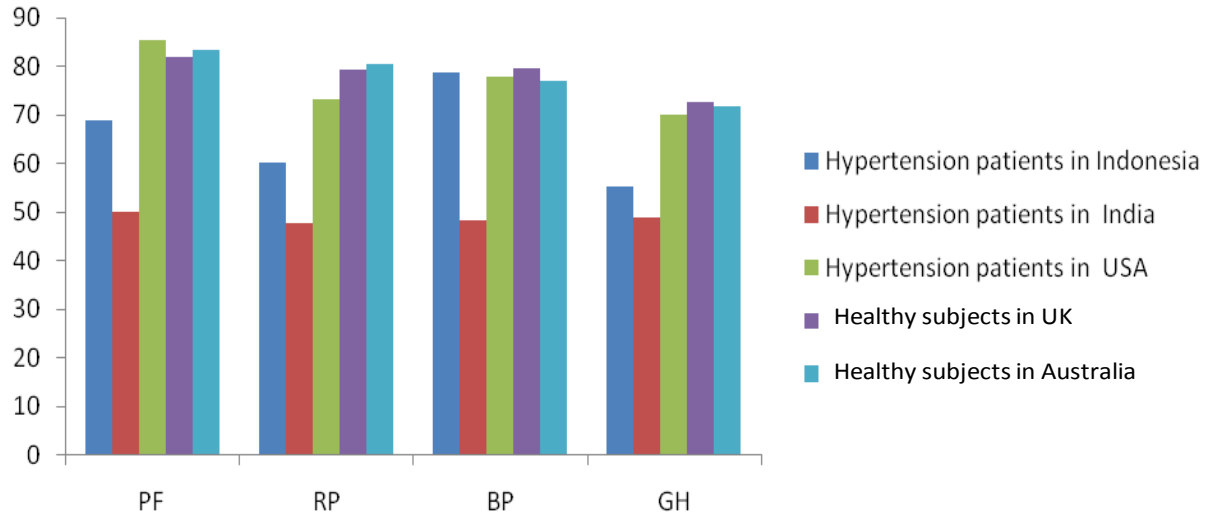

Figure 2 QoL Functions of PCS in Hypertension Patients and Healthy Subjects in Indonesia and other Countries [13-16;23]

Note: PF: Physical Function; RP : Role-Physical; BP: Bodily Pain; GH: General Health

(SD: 5.65) in the combination therapy group. There were no significant differences between monotherapy and combination therapy groups in all those parameters.

The statistical analysis of PCS and MCS differences among this current study and other study in India and USA also among the healthy subjects in were shown in Table 3. The score of PCS in thus current study was higher than previous study in India, but lower than previous study in USA ($p<0.005$). However the MCS score in our study was higher than the MCS score in previous both studies. The differences were significant between Indonesian and Indian hypertension patients, but not in Indonesia and USA patients.[20,21]

Table 4 shows the differences of PCS and MCS among our study and healthy subjects in UK and USA. The PCS score showed significant differences among the three

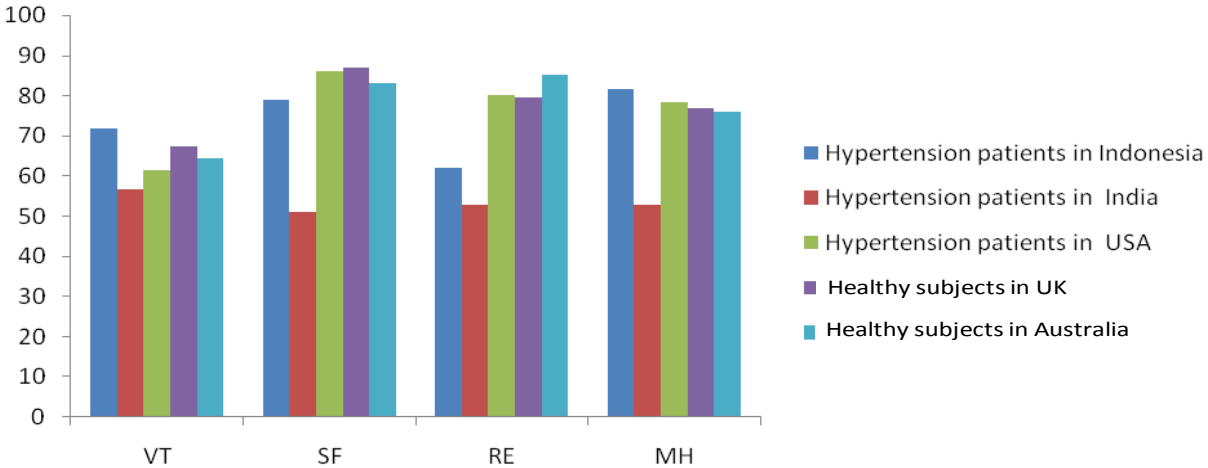

Figure 3 QoL functions of PCS in Hypertension Patients and Healthy Subjects in Indonesia and Other Countries [13-16;23].

Note: VT : Vitality; SF: Social Function; RE: Role-Emotional; MH: Mental Health

groups ($p<0.005$). However there were no significant difference of MCS between our study and both previous studies.[22] We also present the PCS and MCS score scores of our study and other studies in Figure 1. The MCS score of our study has higher score than other hypertension studies in India and USA and similar to other healthy subjects in USA and UK. We present all of the domains scores of hypertension patients and healthy subjects of Indonesian and other countries Figure 2 and Figure 3. In the domains of PCS and MCS, the scores of Indonesian hypertension patients are higher than Indian population and lower than USA population. Some of the domains show higher scores than USA population, such as mental health and vitality. The vitality and mental healthy scores are also higher than the scores of health subjects in UK and Australia.

Discussion

Our present study shows that the hypertension patients' adherence is good with the PCS and MCS scores are comparable to other previous studies. Some patients' characteristics like age, gender, education and comorbidity may predict the PCS and MCS. A study which was conducted by Soni et al., showed that hypertension patients with comorbidity had significant lower quality of life than patients with hypertension without any comorbidity. The number of the comorbid illnesses also was a determinant of patients' quality of life.[23,24] The previous study of hypertension patients in Colorado support our findings that there were no association between age, gender and patients' adherence and there were significant association between patients' socioeconomic status, insurance coverage and patients' adherence.[25] Other previous study also stated that patients' sociodemographic of hypertension patients did not predict the refill adherence in hypertension patients.[26]

Comparing to the other study of hypertensive patients in Saudi Arabia, similar findings were found as older age, female gender, marital status, comorbidity showed significant associations with lower PCS. However, only shorter duration of the hypertension had female gender had significant association with lower MCS.[27] The previous study in the other population stated that factors like age, smoking status, diabetes, BMI, comorbidity, macroalbuminuria and history of depression could predict the physical function of quality of life.[28] However, we did not collect the data of smoking status, macroalbuminuria and history of depression to do the brief discussion.

A previous study about adherence and qol of hypertension patients in India showed that the mean of adherence as assessed with the MARS in the control group was 22.46 in first follow up and 22.81 in second follow up. The intervention group showed the mean of adherence reached 24 and 25 which showed significant differences to the control group. In the other hand the patients quality of life in control group and intervention group in second follow up reached 60 and 70, respectively which showed significant differences.[8] The adherence and patients' perceived health means in this current study shows higher score than the control group and lower score in the intervention group, comparing with the previous study in India. This situation could be caused by interventions done in the previous study about counseling and leaflets given to the patients, which could increase patients' adherence and quality of life.[8]

The different results of PCS and MCS scores in Indonesia, India and USA hypertension subjects could be caused by the sampling criteria for the subjects and also the different instruments. The presence of other chronic diseases which means more medications and more adverse drug events experienced by the patients may affect patients' quality of life and patients' adherence. The previous

systematic review and meta-analysis in hypertension studies supported these results.[29] Comparing the PCS and MCS scores in this current study to the healthy subjects in UK and USA, these finding are interesting since the score of MCS in Indonesian hypertension patients is quite high compare to the healthy subjects in other countries. These results are in line with previous meta-analysis of 20 studies which showed that all the domains of quality of life of hypertension patients were lower than normotensive patients.[29] We assumed that the religious factor and social support may affect the mental health, since the social culture and religious factor in Indonesia are situated different to the other countries. This finding is supported by previous study in in North Carolina which showed that patients with hypertension diagnosis, living with family as social support and having religious activity had higher physical and mental health.[30] The other study in 318 hypertension patients in China also stated that the family social support could improve the medication adherence.[31] Furthermore, we hope that the improvement of medication adherence could affect the patients' quality of life.

Our study has limited sample size and various severity of comorbid situation that may affect patients' adherence and quality of life. Thus the future study which is more concern in the big sample size, multicentered and homogenous subject could be done to support these results.

Conclusion

This current study showed that according to the MARS score (0–25), the hypertension patients' adherence in Gunung Jati hospital was found as 24.03 (SD: 1.98). The average of PCS and MCS were 43.35 (SD: 9.4) and 52.13 (SD:5.59). There are no patients' characteristics which could be the predictors of patients' adherence. However, patients' characteristics such as age and gender may predict PCS, and other factors like education aand comorbidity may predict MCS ($p<0.05$).

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